

Remarks

The above Amendments and these Remarks are in reply to the Office Action mailed April 8, 2008. Claims 1-6, 8-12, 14-29 and 34 were pending in the Application prior to the outstanding Office Action. In the Office Action, the Examiner rejected claims 1-6, 8-12, 14-29 and 34. The present Reply amends claims 1 and 34, leaving for the Examiner's present consideration claims 1-6, 8-12, 14-29 and 34. Reconsideration of the rejections is requested.

I. Claim Rejections -- 35 USC§112

Claims 1-6, 8-12, 14-29 and 34 stand rejected under 35 U.S.C. 112 as failing to comply with the written description requirement. Applicant traverses the rejection.

The Examiner writes that "Independent claims 1 and 34 each recite: 'sustaining the plasma discharge through collisions between the excited precursor and the plasma gas.' The specification lacks support for the claimed 'excited precursor.' The specification discloses a process whereby the precursor efficiently disproportionates into reactive atoms, radicals and ions rather than simply becoming an excited state species having the same chemical structure as the precursor."

Applicant has amended claims 1 and 34 to eliminate the recitation of "excited precursor." Removal of the rejection is respectfully requested.

II. Claim Rejections – 35 USC§102

1. Claims 1-6, 8-12, 14, 18-22, 24, 27-29 and 34 stand rejected under 35 U.S.C. 102 (b) as being anticipated by *Fleming, Jr. et al.* (U.S. Patent No. 5,000,771). Applicant respectfully traverses the rejection.

The Examiner writes that "*Fleming* teaches...providing the reactive precursor to the plasma discharge through the inner tube to generate a reactive species into the plasma torch (see, for example, figure 1 and column 7, lines 4-14)....*Fleming* teaches shaping the workpiece surface by controlling a footprint of the plasma discharge from the plasma torch (see, for example, column 2, line 35-column 3, line 39)."

Referring to Fig. 1, *Fleming* teaches that a "gas source 17 delivers the desired gas used for the plasma discharge into the mantle 11 **[via the inner tube]**...The additional gas, supplied by gas source 18 **[via the outer tube]** and confined to the outer region of the torch by shield 22, creates an area in the upper portion of the confinement region where higher energy is needed to couple RF energy into the gases to form a plasma. However, a plasma will naturally form at locations where the resistance to

formation is generally lowest, i.e., the location where the energy requirements are generally lowest. In essence, the high threshold gas moves a significant portion of the optimal region for plasma formation out of the confinement region.” See col. 4, lines 42-66. It is also noted that *Fleming* discloses that “the material is removed by vaporization (hence, there is no chemical reaction on or mechanical grinding of the preform surface), no significant mechanical stress concentrations are formed in the preform” (Emphasis added). See col. 3, lines 40-50.

Fleming fails to disclose “an outer tube to communicate a plasma gas to a distal end of the plasma torch...and an inner tube nested within the outer tube to communicate a reactive precursor to the distal end... introducing the reactive precursor to the plasma discharge through the inner tube to generate a reactive species... shaping the surface of the workpiece using the reactive species within the plasma discharge” as recited in claims 1 and 34. First, the plasma of *Fleming* [i.e., the “desired gas used for the plasma discharge”] is communicated to the distal end of the plasma torch by the inner tube of Fig. 1. Second, the additional gas is introduced to the outer tube to the plasma outside of the confinement region, and is not used to “generate a plasma discharge” or “generate a reactive species.” Third, *Fleming* does not rely on “shaping the surface of the workpiece using the reactive species within the plasma discharge.” As noted, *Fleming* teaches shaping by vaporization, not by shaping using reactive species.

Because *Fleming* fails to disclose all of the features of claims 1 and 34, *Fleming* cannot anticipate claims 1 and 34 under 35 U.S.C. 102 (b). Dependent claims have at least the features of the independent claims from which they depend; therefore, *Fleming* fails to anticipate claims 2-6, 8-12, 14, 18-22, 24, 27-29 (which ultimately depend from claim 1) under 35 U.S.C. 102 (b).

2. Claims 1-6, 8-12, 14-17, 20, 23, 28, 29 and 34 stand rejected under 35 U.S.C. 102(a) as being anticipated by *Böhm et al.* (DE 199 25 790 A1). Applicant respectfully traverses the rejection.

The Examiner writes that “*Böhm* teaches a method for shaping a surface of a workpiece, comprising: placing the workpiece in a plasma processing chamber including an inductively-coupled plasma (ICP) torch having an outer tube to communicate a plasma gas to a distal end of the plasma torch and an inner tube nested within the outer tube to communicate a reactive precursor to the distal end (see figure 1 and the following excerpts from the translation of record).”

However, *Böhm* fails to disclose “a coil surrounding the distal end of the outer tube... generating a plasma discharge by applying current from a radio frequency (RF) power source to the coil to excite the plasma gas” as recited in claims 1 and 34. On the contrary, *Böhm* uses a microwave source for generating a plasma.

Because *Böhm* fails to disclose all of the features of claims 1 and 34, *Böhm* cannot anticipate claims 1 and 34 under 35 U.S.C. 102 (b). Dependent claims have at least the features of the independent claims from which they depend; therefore, *Böhm* fails to anticipate claims 2-6, 8-12, 14-17, 20, 23, 28, and 29 (which ultimately depend from claim 1) under 35 U.S.C. 102 (b).

III. Claim Rejections – 35 USC§103

1. Claims 15-17 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Fleming* as applied to claim 1 above and further in view of *Selitser* (US Patent No. 6,218,640). Applicant respectfully traverses the rejection.

The Examiner writes that “*Fleming* does not teach a torch comprising three nested tubes. *Fleming* does not disclose the pressure at which the plasma torch operates...*Selitser* teaches a plasma torch comprising a plurality of concentric tubes.”

However, *Fleming* in view of *Selitser* fails to teach all of the elements of claims 15-17, and 23. *Fleming* in view of *Selitser* fails to teach “an outer tube to communicate a plasma gas to a distal end of the plasma torch, a coil surrounding the distal end of the outer tube...an intermediate tube arranged between the outer tube and the inner tube” as recited in claim 15. The 3rd nested tube of *Selitser* is outside of the outer tube and does not communicate a plasma gas to the distal end of the plasma torch. The 3rd nested tube of *Selitser* is not between the inner tube and outer tube as recited in claim 15. Because *Fleming* in view of *Selitser* fails to disclose all of the features of claim 15, *Fleming* in view of *Selitser* cannot render claims 15 and 16 and 17 (which depend from claim 15) obvious under 35 U.S.C. 103(a).

As regards claim 23, *Fleming* in view of *Selitser* fails to teach all of the elements of claim 1. As argued above, *Fleming* fails to teach “an outer tube to communicate a plasma gas to a distal end of the plasma torch...and an inner tube nested within the outer tube to communicate a reactive precursor to the distal end... introducing the reactive precursor to the plasma discharge through the inner tube to generate a reactive species... shaping the surface of the workpiece using the reactive species within the plasma discharge” as recited in claim 1. *Selitser* fails to remedy this deficiency. *Selitser* does not teach “an outer tube to communicate a plasma gas to a distal end of the plasma torch...and an inner tube nested within the outer tube to communicate a reactive precursor to the distal end.” *Selitser* teaches communicating a plasma gas by way of the inner tube (21), and injecting a sheath gas in the outer tube (20) to prevent erosion. Because *Fleming* in view of *Selitser* fails to disclose all of the features of claim 1, *Fleming* in view of *Selitser* cannot render claim 23 (which depends from claim 1) obvious under 35 U.S.C. 103(a).

2. Claims 24-26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Böhm*. Applicant respectfully traverses the rejection.

As argued above, *Böhm* fails to teach or suggest all of the features of claim 1. Because *Böhm* fails to teach or suggest all of the features of claim 1, *Böhm* cannot render claim 1 obvious under 35 U.S.C. 103(a). Dependent claims have at least the features of the independent claims from which they depend; therefore, *Böhm* fails to render claims 24-26 (which ultimately depend from claim 1) under 35 U.S.C. 103(a).

III. Conclusion

In light of the above, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and a Notice of Allowance is requested. The Examiner is respectfully requested to telephone the undersigned before an advisory action is issued in order to avoid any unnecessary filing of an appeal.

No fee is believed due with this Reply, however, the Commissioner is authorized to charge any underpayment or to credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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